0026260 "TF/95960

FIG. 1

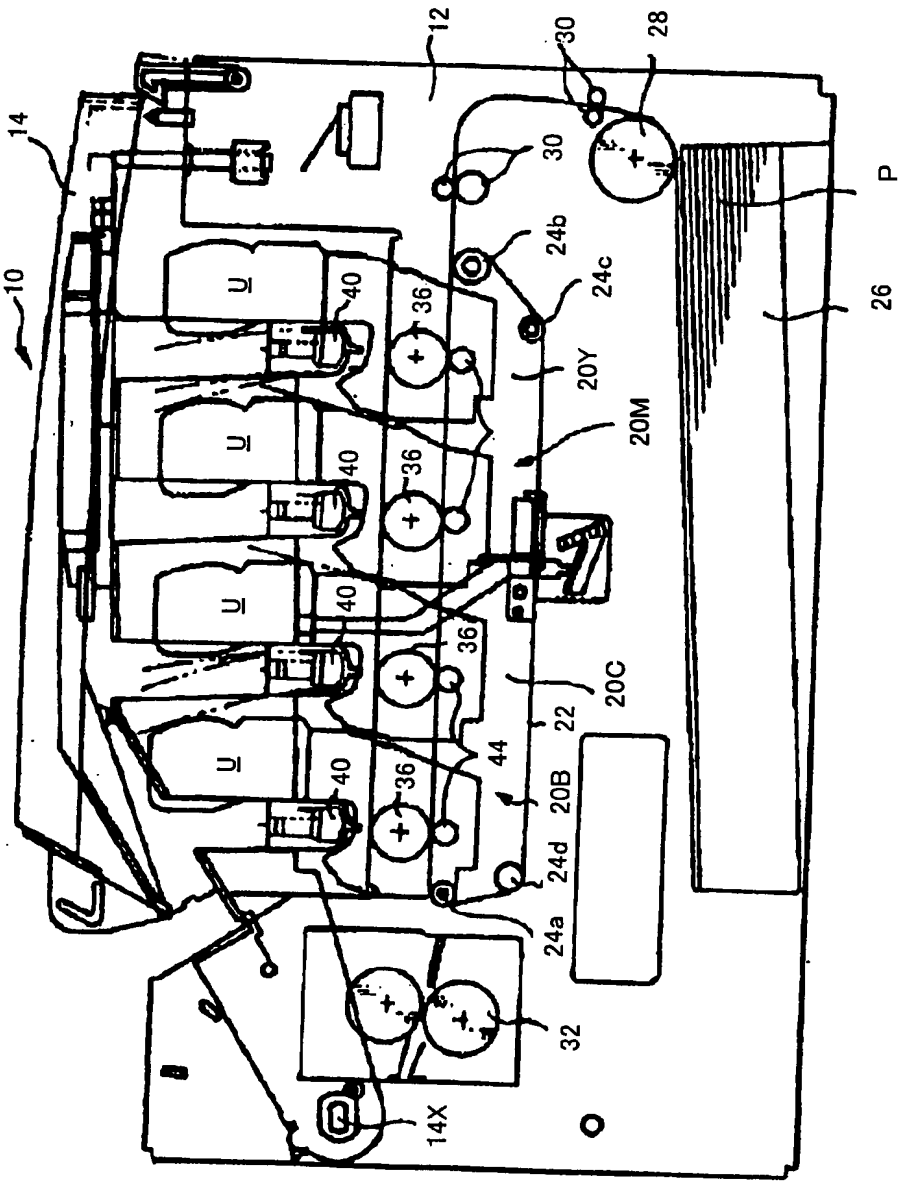
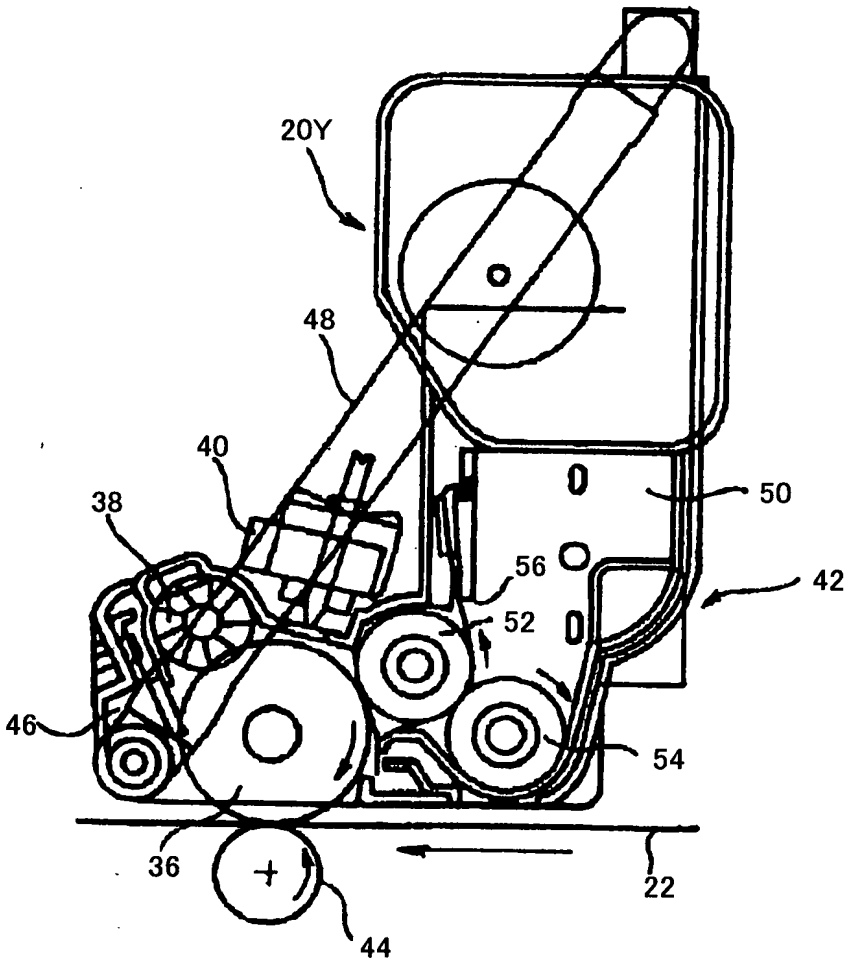
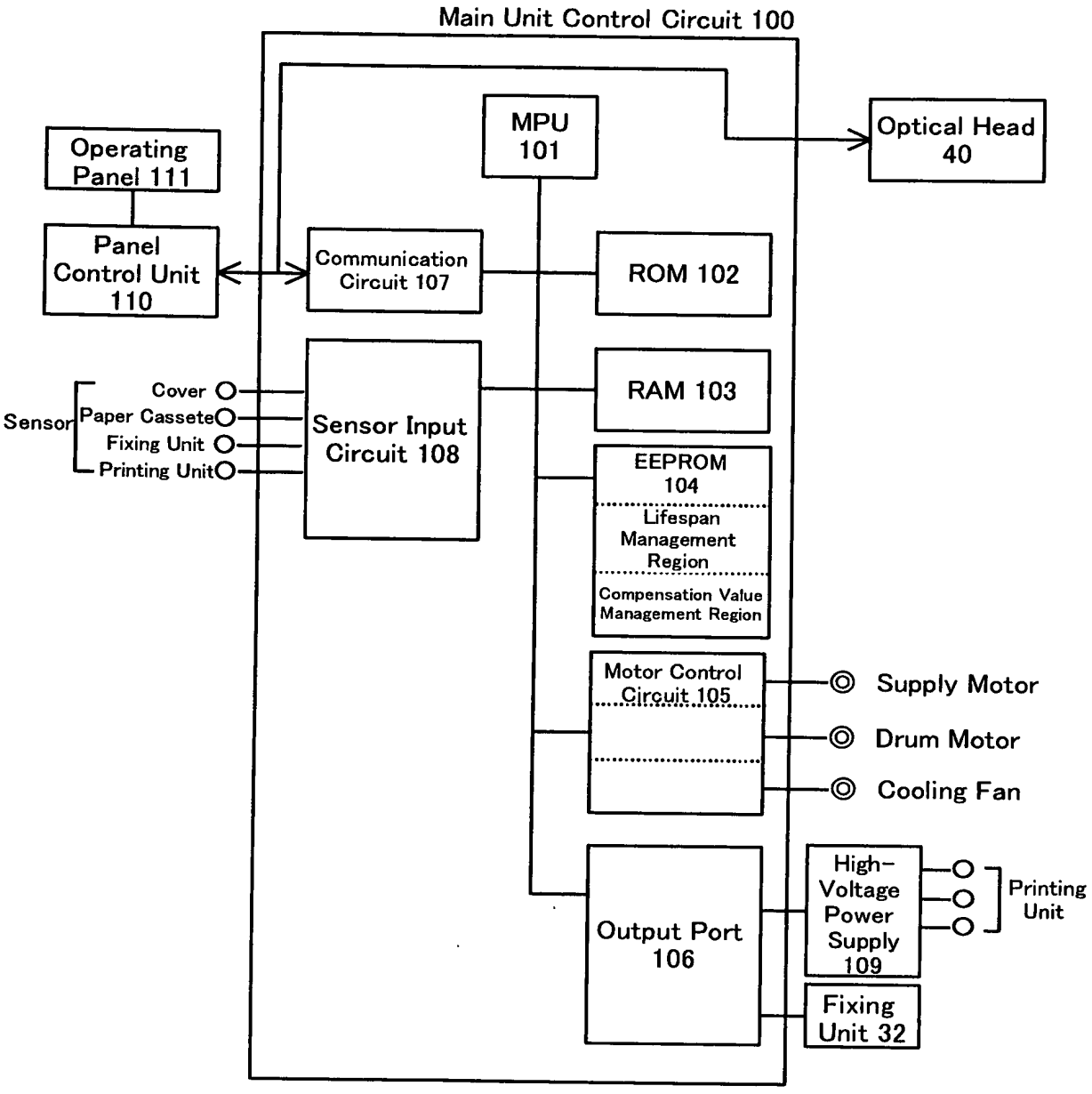


FIG. 2



0022650 "4T2795960

FIG. 3


Main Unit Control Circuit 100
MPU 101
Optical Head 40
Operating Panel 111
Panel Control Unit 110
Communication Circuit 107
ROM 102
RAM 103
Sensor
Cover
Paper Cassete
Fixing Unit
Printing Unit
Sensor Input Circuit 108
EEPROM 104
Lifespan Management Region
Compensation Value Management Region
Motor Control Circuit 105
Supply Motor
Drum Motor
Cooling Fan
Output Port 106
High-Voltage Power Supply 109
Printing Unit
Fixing Unit 32

Initial (0 × M + 0)

	Value
Total Print Number Count (Upper) 1	0
Total Print Number Count (Upper) 2	0
Total Print Number Count (Upper) 3	0
Total Print Number Count (Lower) 0	0
Total Print Number Count (Lower) 1	0
⋮	
Total Print Number Count (Lower) N	0

FIG. 4A

After Printing One Copy (0 × M + 1)

	Value
Total Print Number Count (Upper) 1	0
Total Print Number Count (Upper) 2	0
Total Print Number Count (Upper) 3	0
Total Print Number Count (Lower) 0	1
Total Print Number Count (Lower) 1	0
⋮	
Total Print Number Count (Lower) N	0

FIG. 4B

After Printing M−1 Copies (0 × M + (M−1))

	Value
Total Print Number Count (Upper) 1	0
Total Print Number Count (Upper) 2	0
Total Print Number Count (Upper) 3	0
Total Print Number Count (Lower) 0	M−1
Total Print Number Count (Lower) 1	0
⋮	
Total Print Number Count (Lower) N	0

FIG. 4C

After Printing M Copies (1 × M + 0)

	Value
Total Print Number Count (Upper) 1	1
Total Print Number Count (Upper) 2	1
Total Print Number Count (Upper) 3	1
Total Print Number Count (Lower) 0	0
Total Print Number Count (Lower) 1	0
⋮	
Total Print Number Count (Lower) N	0

FIG. 4D

After Printing N × M−1 Copies

	Value
Total Print Number Count (Upper) 1	N−1
Total Print Number Count (Upper) 2	N−1
Total Print Number Count (Upper) 3	N−1
Total Print Number Count (Lower) 0	0
Total Print Number Count (Lower) 1	0
⋮	
Total Print Number Count (Lower) N	M−1

FIG. 4E

After Printing N × M Copies

	Value
Total Print Number Count (Upper) 1	N
Total Print Number Count (Upper) 2	N
Total Print Number Count (Upper) 3	N
Total Print Number Count (Lower) 0	0
Total Print Number Count (Lower) 1	0
⋮	
Total Print Number Count (Lower) N	0

FIG. 4F

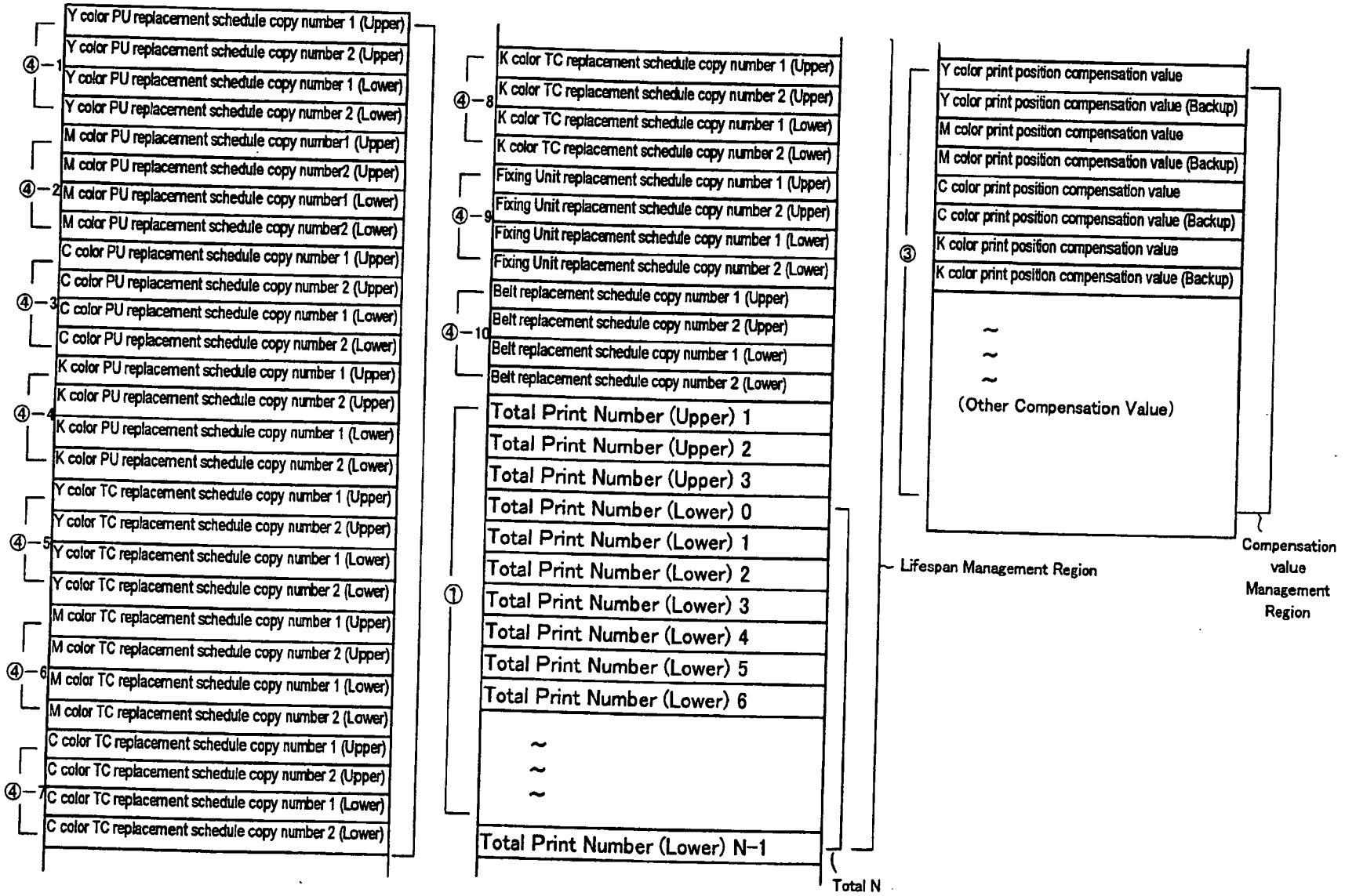
0020020-4F/5960

FIG. 5

Print Number	Total Print Number Counter (Lower)							
	0	1	2	3	4	5	~	N−1
M×0~M×1−1	○							
M×1~M×2−1		○						
M×2~M×3−1			○					
M×3~M×4−1				○				
M×4~M×5−1					○			
M×5~M×6−1						○		
~							~	
M×(N−1)~M×N−1								○
M×N~M×(N+1)−1	○							
M×(N+1)~M×(N+2)−1		○						
M×(N+2)~M×(N+3)−1			○					
M×(N+3)~M×(N+4)−1				○				
M×(N+4)~M×(N+5)−1					○			
M×(N+5)~M×(N+6)−1						○		
~							~	
M×(N+N−1)~M×(N+N)−1								○
M×(N+N)~M×(N+N+1)−1	○							

0002604-4/9/960

FIG. 6


④-1
Y color PU replacement schedule copy number 1 (Upper)
Y color PU replacement schedule copy number 2 (Upper)
Y color PU replacement schedule copy number 1 (Lower)
Y color PU replacement schedule copy number 2 (Lower)
④-2
M color PU replacement schedule copy number1 (Upper)
M color PU replacement schedule copy number2 (Upper)
M color PU replacement schedule copy number1 (Lower)
M color PU replacement schedule copy number2 (Lower)
④-3
C color PU replacement schedule copy number 1 (Upper)
C color PU replacement schedule copy number 2 (Upper)
C color PU replacement schedule copy number 1 (Lower)
C color PU replacement schedule copy number 2 (Lower)
④-4
K color PU replacement schedule copy number 1 (Upper)
K color PU replacement schedule copy number 2 (Upper)
K color PU replacement schedule copy number 1 (Lower)
K color PU replacement schedule copy number 2 (Lower)
④-5
Y color TC replacement schedule copy number 1 (Upper)
Y color TC replacement schedule copy number 2 (Upper)
Y color TC replacement schedule copy number 1 (Lower)
Y color TC replacement schedule copy number 2 (Lower)
④-6
M color TC replacement schedule copy number 1 (Upper)
M color TC replacement schedule copy number 2 (Upper)
M color TC replacement schedule copy number 1 (Lower)
M color TC replacement schedule copy number 2 (Lower)
④-7
C color TC replacement schedule copy number 1 (Upper)
C color TC replacement schedule copy number 2 (Upper)
C color TC replacement schedule copy number 1 (Lower)
C color TC replacement schedule copy number 2 (Lower)
④-8
K color TC replacement schedule copy number 1 (Upper)
K color TC replacement schedule copy number 2 (Upper)
K color TC replacement schedule copy number 1 (Lower)
K color TC replacement schedule copy number 2 (Lower)
④-9
Fixing Unit replacement schedule copy number 1 (Upper)
Fixing Unit replacement schedule copy number 2 (Upper)
Fixing Unit replacement schedule copy number 1 (Lower)
Fixing Unit replacement schedule copy number 2 (Lower)
④-10
Belt replacement schedule copy number 1 (Upper)
Belt replacement schedule copy number 2 (Upper)
Belt replacement schedule copy number 1 (Lower)
Belt replacement schedule copy number 2 (Lower)
①
Total Print Number (Upper) 1
Total Print Number (Upper) 2
Total Print Number (Upper) 3
Total Print Number (Lower) 0
Total Print Number (Lower) 1
Total Print Number (Lower) 2
Total Print Number (Lower) 3
Total Print Number (Lower) 4
Total Print Number (Lower) 5
Total Print Number (Lower) 6
~
~
~
Total Print Number (Lower) N-1
Total N
Lifespan Management Region
③
Y color print position compensation value
Y color print position compensation value (Backup)
M color print position compensation value
M color print position compensation value (Backup)
C color print position compensation value
C color print position compensation value (Backup)
K color print position compensation value
K color print position compensation value (Backup)
~
~
~
(Other Compensation Value)
Compensation value Management Region

EEPROM (Initial)

	Value
Total Print Number Count 1	0
Total Print Number Count 2	0
TC Replacement Schedule Copy Number 1	Y
TC Replacement Schedule Copy Number 2	Y
PU Replacement Schedule Copy Number 1	Z
PU Replacement Schedule Copy Number 2	Z

FIG. 7A

EEPROM (After Printing One Copy)

	Value
Total Print Number Count 1	1
Total Print Number Count 2	1
TC Replacement Schedule Copy Number 1	Y
TC Replacement Schedule Copy Number 2	Y
PU Replacement Schedule Copy Number 1	Z
PU Replacement Schedule Copy Number 2	Z

FIG. 7B

EEPROM (After Printing X Copies)

	Value
Total Print Number Count 1	X
Total Print Number Count 2	X
TC Replacement Schedule Copy Number 1	Y
TC Replacement Schedule Copy Number 2	Y
PU Replacement Schedule Copy Number 1	Z
PU Replacement Schedule Copy Number 2	Z

FIG. 7C

EEPROM (After Printing Y Copies)

	Value
Total Print Number Count 1	Y
Total Print Number Count 2	Y
TC Replacement Schedule Copy Number 1	Y
TC Replacement Schedule Copy Number 2	Y
PU Replacement Schedule Copy Number 1	Z
PU Replacement Schedule Copy Number 2	Z

FIG. 7D

EEPROM (After Replacing TC)

	Value
Total Print Number Count 1	$Y+\alpha$
Total Print Number Count 2	$Y+\alpha$
TC Replacement Schedule Copy Number 1	$Y+\alpha+Y$
TC Replacement Schedule Copy Number 2	$Y+\alpha+Y$
PU Replacement Schedule Copy Number 1	Z
PU Replacement Schedule Copy Number 2	Z

FIG. 7E

EEPROM (After Printing M Copies and Replacing PU)

	Value
Total Print Number Count 1	$Z+\beta$
Total Print Number Count 2	$Z+\beta$
TC Replacement Schedule Copy Number 1	$Y+\alpha+Y$
TC Replacement Schedule Copy Number 2	$Y+\alpha+Y$
PU Replacement Schedule Copy Number 1	$Z+\beta+Z$
PU Replacement Schedule Copy Number 2	$Z+\beta+Z$

FIG. 7F

US 6,782,196 B2

FIG. 8

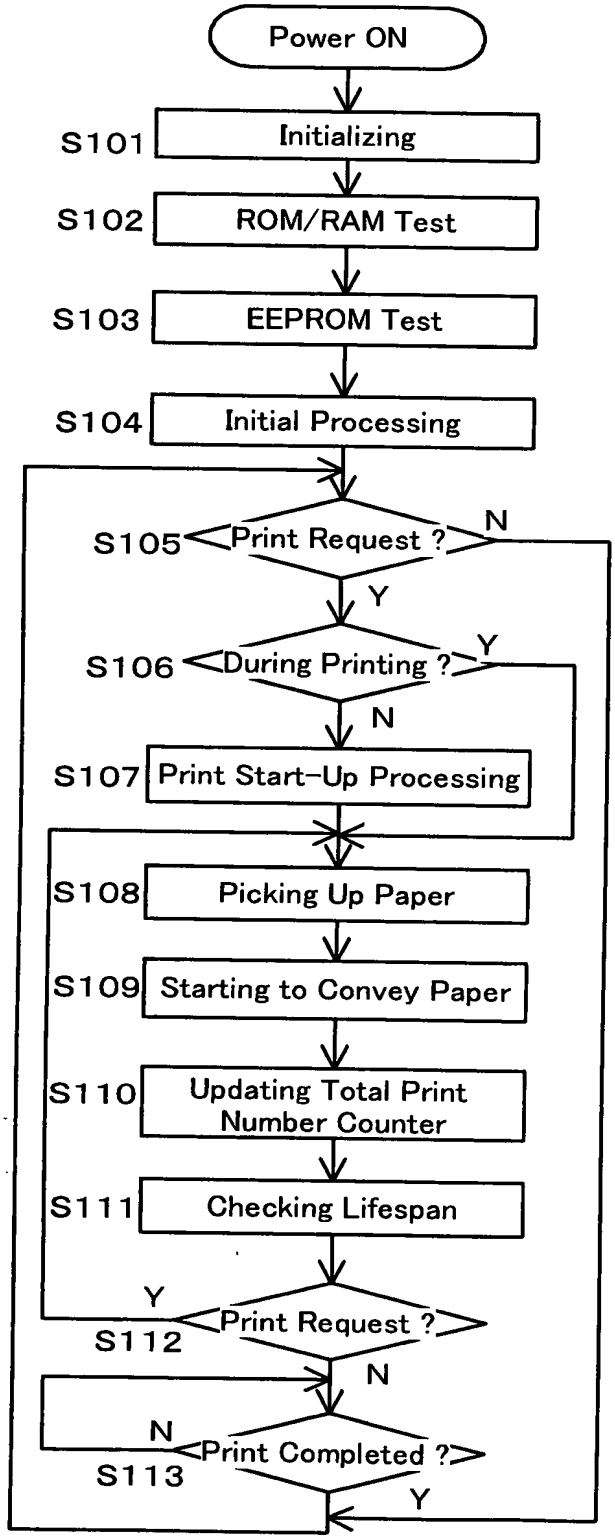
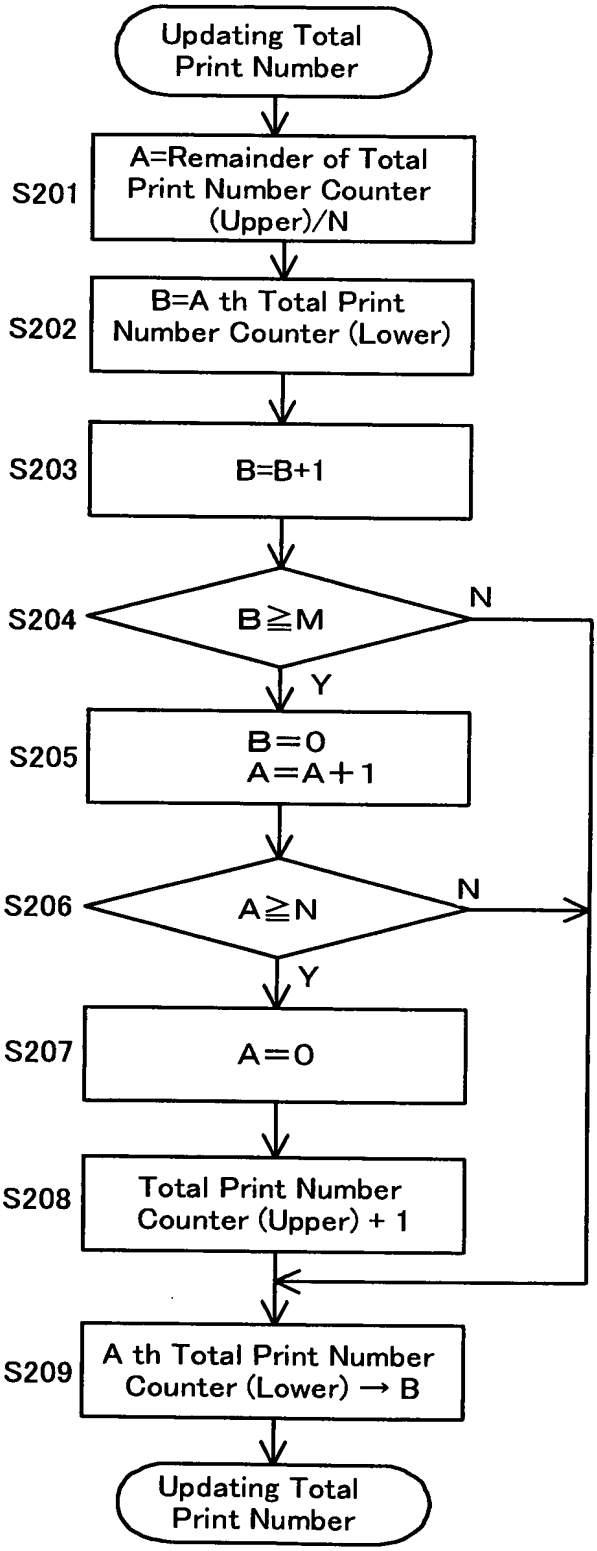

Power ON
S101
Initializing
S102
ROM/RAM Test
S103
EEPROM Test
S104
Initial Processing
S105
Print Request ?
N
Y
S106
During Printing ?
Y
N
S107
Print Start-Up Processing
S108
Picking Up Paper
S109
Starting to Convey Paper
S110
Updating Total Print Number Counter
S111
Checking Lifespan
Y
S112
Print Request ?
N
N
S113
Print Completed ?
Y

FIG. 9



0026260 "4"7"9960

FIG. 10

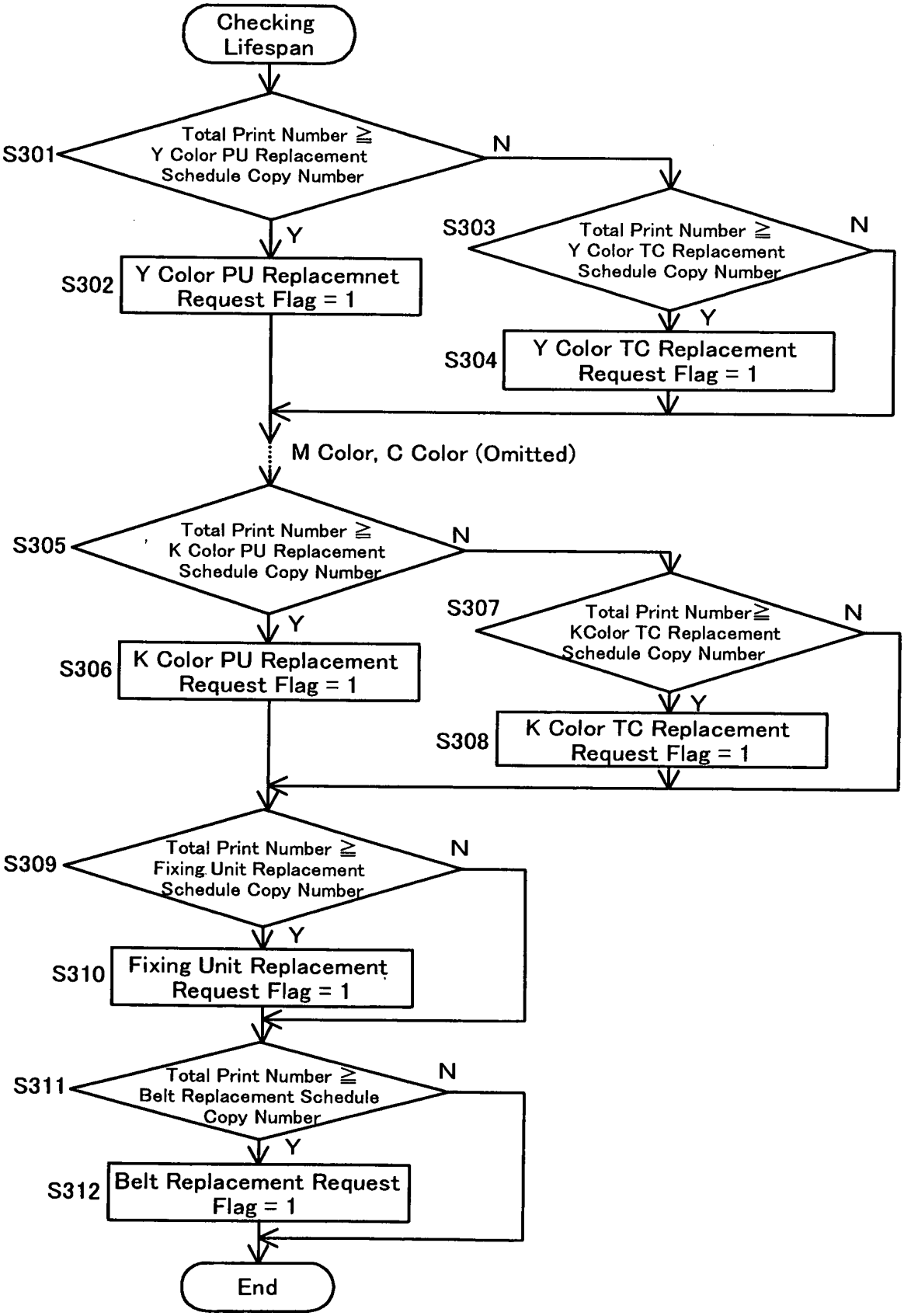
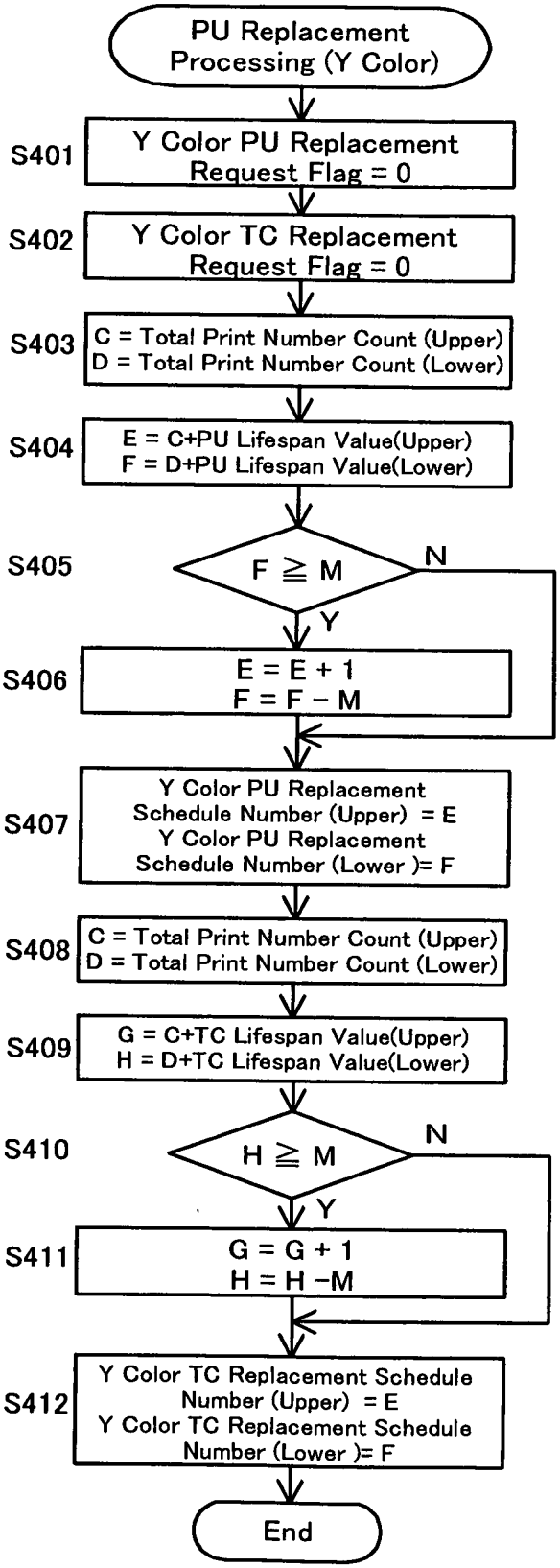
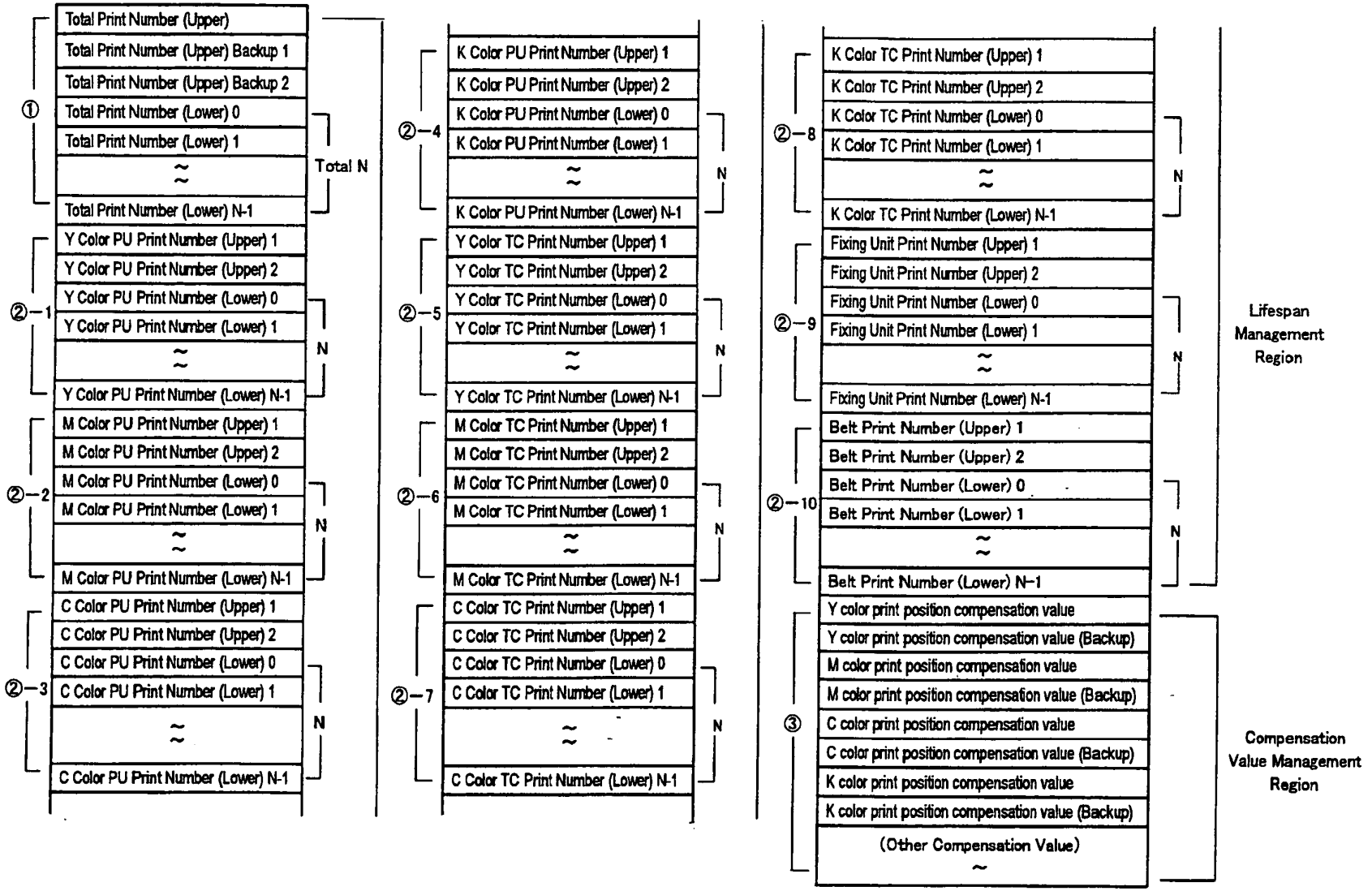

Checking Lifespan
S301
Total Print Number ≧ Y Color PU Replacement Schedule Copy Number
N
Y
S302
Y Color PU Replacemnet Request Flag = 1
S303
Total Print Number ≧ Y Color TC Replacement Schedule Copy Number
N
Y
S304
Y Color TC Replacement Request Flag = 1
M Color, C Color (Omitted)
S305
Total Print Number ≧ K Color PU Replacement Schedule Copy Number
N
Y
S306
K Color PU Replacement Request Flag = 1
S307
Total Print Number≧ KColor TC Replacement Schedule Copy Number
N
Y
S308
K Color TC Replacement Request Flag = 1
S309
Total Print Number ≧ Fixing Unit Replacement Schedule Copy Number
N
Y
S310
Fixing Unit Replacement Request Flag = 1
S311
Total Print Number ≧ Belt Replacement Schedule Copy Number
N
Y
S312
Belt Replacement Request Flag = 1
End

FIG. 11



0050214-0050300

FIG. 12


①
Total Print Number (Upper)
Total Print Number (Upper) Backup 1
Total Print Number (Upper) Backup 2
Total Print Number (Lower) 0
Total Print Number (Lower) 1
Total Print Number (Lower) N-1
Total N
②−1
Y Color PU Print Number (Upper) 1
Y Color PU Print Number (Upper) 2
Y Color PU Print Number (Lower) 0
Y Color PU Print Number (Lower) 1
Y Color PU Print Number (Lower) N-1
N
②−2
M Color PU Print Number (Upper) 1
M Color PU Print Number (Upper) 2
M Color PU Print Number (Lower) 0
M Color PU Print Number (Lower) 1
M Color PU Print Number (Lower) N-1
N
②−3
C Color PU Print Number (Upper) 1
C Color PU Print Number (Upper) 2
C Color PU Print Number (Lower) 0
C Color PU Print Number (Lower) 1
C Color PU Print Number (Lower) N-1
N
②−4
K Color PU Print Number (Upper) 1
K Color PU Print Number (Upper) 2
K Color PU Print Number (Lower) 0
K Color PU Print Number (Lower) 1
K Color PU Print Number (Lower) N-1
N
②−5
Y Color TC Print Number (Upper) 1
Y Color TC Print Number (Upper) 2
Y Color TC Print Number (Lower) 0
Y Color TC Print Number (Lower) 1
Y Color TC Print Number (Lower) N-1
N
②−6
M Color TC Print Number (Upper) 1
M Color TC Print Number (Upper) 2
M Color TC Print Number (Lower) 0
M Color TC Print Number (Lower) 1
M Color TC Print Number (Lower) N-1
N
②−7
C Color TC Print Number (Upper) 1
C Color TC Print Number (Upper) 2
C Color TC Print Number (Lower) 0
C Color TC Print Number (Lower) 1
C Color TC Print Number (Lower) N-1
N
②−8
K Color TC Print Number (Upper) 1
K Color TC Print Number (Upper) 2
K Color TC Print Number (Lower) 0
K Color TC Print Number (Lower) 1
K Color TC Print Number (Lower) N-1
N
②−9
Fixing Unit Print Number (Upper) 1
Fixing Unit Print Number (Upper) 2
Fixing Unit Print Number (Lower) 0
Fixing Unit Print Number (Lower) 1
Fixing Unit Print Number (Lower) N-1
N
②−10
Belt Print Number (Upper) 1
Belt Print Number (Upper) 2
Belt Print Number (Lower) 0
Belt Print Number (Lower) 1
Belt Print Number (Lower) N-1
N
Lifespan Management Region
③
Y color print position compensation value
Y color print position compensation value (Backup)
M color print position compensation value
M color print position compensation value (Backup)
C color print position compensation value
C color print position compensation value (Backup)
K color print position compensation value
K color print position compensation value (Backup)
(Other Compensation Value)
Compensation Value Management Region